Course syllabus

Operativsystem
Operating Systems

EDAF35, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED C/D
Date of Decision: 2023-04-18

General Information

Elective for: C4-sec, D4-is, E4-pv, F4, Pi4
Language of instruction: The course will be given in English on demand

Aim

The purpose of the course is that the students shall understand how operating systems are implemented, which is an important part of understanding computer systems. More specific, a goal with the course is that, when they have graduated as engineers, with special knowledge gained in this course, will be able to work with and on kernel functionality of operating systems such as Linux.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- understand how operating systems are constructed in order to efficiently manage the resources of the system
- understand how the operating system provides an abstract machine for application programs
- know how software development works on the operating system level

Competences and skills
For a passing grade the student must

- show a basic understanding of how operating systems such as Linux are constructed,
- be able to implement basic kernel functionality related to system calls, process management, memory management and file systems,

- be able to understand what is happening in the operating system during the execution of an application program,
- be able to modify / make additions to an existing operating system.

Judgement and approach
For a passing grade the student must

- be able to assess what type of operating system may be appropriate to use for different purposes

Contents

The design of operating systems. CPU scheduling. Memory management. Virtual memory. Secondary memories and file systems. Distributed systems. Protection and security. Virtualization and hypervisors. Examples of different kinds of operating systems. Practical experience from software development on the operating system level.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)
Assessment: A pass on the course requires completing the laboratory assignments and pass the written examination. The final grade is based on the result of the written exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts
Code: 0122. **Name:** Laboratory Work.
Credits: 4,5. **Grading scale:** UG. **Assessment:** For a passing grade the laboratory work must be completed.
Code: 0222. **Name:** Examination.
Credits: 3. **Grading scale:** TH. **Assessment:** Approved examination. **Contents:** Written examination.

Admission

Admission requirements:

- EDAA01 Programming - Second Course or EDAA30 Programming in Java - Second Course

Assumed prior knowledge: Course contents are easier to understand with knowledge from Computer Architecture (EITF20 or similar) and Concurrent Programming (EDAF55, EDAF85, EDAP10).
The number of participants is limited to: No
The course overlaps following course/s: EDA055, EDA050, EDAF01

Reading list

- A. Silberschatz, G. Gagne, P.B. Galvin: Operating Systems Concepts, 10th Edition. Wiley, 2018, ISBN: 978-1-119-32091-3. Main textbook.

Contact and other information

Course coordinator: Flavius Gruian, flavius.gruian@cs.lth.se
Course homepage: http://cs.lth.se/edaf35/